Revised Final

Travis Air Force Base
Environmental Restoration Program
Restoration Program Manager's
Meeting Minutes
19 June 2019, 0930 Hours

Mr. Lonnie Duke of the Air Force Civil Engineer Center (AFCEC) Restoration Installation Support Section (ISS) conducted the Restoration Program Manager's (RPM) meeting on 19 June 2019 at 0930 hours in Building 248 at Travis AFB, California. Attendees included:

Lonnie Duke	AFCEC/CZOW
Glenn Anderson	AFCEC/CZOW
Angel Santiago	AFCEC/CZOW
Monika O'Sullivan	AFCEC/CZOW
Kurt Grunawalt	Travis AFB/Legal
Merrie Schilter-Lowe	Travis AFB/PA
Sarah Miller	USACE-Omaha
Brian Boccellato	USACE-Omaha
Jason Sherman (via telephone)	AFCEC/AFLOA
Ben Fries	DTSC
Adriana Constantinescu	RWQCB
Nadia Hollan Burke	EPA
Indira Balkissoon (via telephone)	TechLaw, Inc.
Mike Wray	CH2M/Jacobs
Leslie Royer	CH2M/Jacobs
Tony Chakurian	CH2M/Jacobs
Jill Dunphy (via telephone)	CH2M/Jacobs

Handouts distributed prior to or at the meeting, discussions, and presentations included:

Attachment 1	Meeting Agenda
Attachment 2	Master Meeting and Document Schedule
Attachment 3	SBBGWTP Monthly Data Sheet (May 2019)
Attachment 4	CGWTP Monthly Data Sheet (May 2019)
Attachment 5	ST018 Monthly Data Sheet (May 2019)
Attachment 6	Program Update

1. ADMINISTRATIVE

A. Previous Meeting Minutes

There were no comments on the Draft Meeting Minutes from May 2019.

B. Action Item Review

Action items from May 2019 were reviewed.

Action Item 1 is ongoing: Ms. O'Sullivan to provide updates on perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). June 2019 update: Mr. Duke informed the team that the contract for the expanded site inspection has been awarded to a company called Aerostar. The kickoff call is scheduled for 20 June 2019 at 1300 hours. A schedule will be developed during the call.

Action Item 2 is ongoing: Mr. Duke will continue to provide design and construction information for the new KC-46 Hangar construction project. June 2019 update: The Air Force will be awarding the contract for construction by late 2019, so this continues the pressure to complete the amendments to the NEWIOU Soil, Sediment and Surface Water Record of Decision and the Site SS016 Remedial Design/Remedial Action (RD/RA) Work Plan. EPA indicated that responses to their comments on the Site SS016 RD/RA Work Plan amendment, regarding the relocation of the horizontal well at the site, are acceptable.

Action Item 3: The PMs for all agencies will elevate to their management any suggestions for keeping document reviews on schedule going forward. June 2019 update: Mr. Duke reminded the team that several documents are well overdue and are at risk of not being completed because of expiration of associated funds at the end of the fiscal year, but noted that there has been progress: The 2017 GRISR has been finalized, and Mr. Anderson is expediting the Air Force review of the PreDraft 2018 Groundwater Remediation Implementation Status Report (GRISR) so the draft can be delivered to the agencies earlier than noted on the Master Meeting and Document Schedule. Ms. Burke suggested for small documents or ones with relatively few comments, the version of documents that is submitted with responses to comments show redline strikeout text. Mr. Duke requested that all agencies continue to work with their legal departments to review and provide comments in the shortest amount of time possible, in order to keep the documents on schedule.

Action Item 4: Mr. Wray will discuss sampling the piezometer near the DP039 bioreactor with Ms. Royer, to verify that groundwater being diverted from the infiltration trench is being fully treated by the bioreactor. June 2019 update: A sample was collected as part of the annual GRIP sampling; once we get results, we will compare them to past results. Past results have all been ND; if this result is significantly different, we can consider increasing the monitoring frequency, but

we have no reason to expect that they'll be different. This action item remains open until results are received and interpreted.

Action Item 5: Mr. Duke or Mr. Anderson will follow up on the TPH motor oil detection at the Central Groundwater Treatment Plant. June 2019 update: The detection limit used for analyzing TPH-motor oil samples for several months in 2019 was 160-180 ug/L, but the reporting limit is 100 ug/L, so the sampling results don't indicate if there was an exceedance. Ms. Royer noted that she suspects it may be due to matrix interference and will check with the project chemist. This action item remains open.

C. Master Meeting and Document Schedule Review (see Attachment 2)

The Travis AFB Master Meeting and Document Schedule (MMDS) was discussed during this meeting (see Attachment 2).

Travis AFB Annual Meeting and Teleconference Schedule

The next RPM meeting will be a teleconference held on Wednesday, 17 July 2019, at 0930.

The 2020 Meeting Schedule has been provided so that people can start planning ahead for next year.

Travis AFB Master Document Schedule

— Community Relations Plan Update (CRP): There was no change to the schedule. This document will be finished as soon as the other higher-priority documents are completed, but not likely in 2019.

— Amendment to the NEWIOU Soil ROD for the Travis AFB ERP Sites SS016 and SD033: There was no change to the schedule. The Air Force and DTSC attorneys are developing language regarding how the new toxicity criteria will be applied specifically to Travis AFB. Mr. Sherman noted that they have reached an agreement and are finalizing the language reflecting the agreement. The EPA sent comments and a markup on May 17. The Water Board will be sending comments shortly; they are waiting to see the final ARARs table. Ms. Constantinescu noted that most of the comments are editorial. **This is a super-critical document** due to site work supporting planned KC-46 hangar construction, and it has been **delayed for almost a year**.

— No Further Action ROD for Old Skeet Range (TS060 and TS060A MRA): The Response to Comments and Draft Final due dates were changed to 13 June 2019; the Final due date was changed to 15 July 2019. The signature page is making its way through the Air Force. Ms. Constantinescu noted that the Water Board has a signed signature page which she handed to Mr. Duke at today's meeting. Mr. Fries stated that the signature page is with Charlie Ridenouer and Dominique Forrester. Ms. Burke said the EPA needs to finalize their internal memo, which will transmit

the signature page to her management. **This is becoming a critical document, because it affects two site closures**.

— Site SS016 Remedial Design/Remedial Action Work Plan: There was no change in the schedule. This document won't go final until the final Amendment to the NEWIOU Soil, Sediment and Surface Water ROD is published. There is a chance that this document may need to be revised prior to finalizing, if the new toxicity criteria language for Travis AFB generate lower cleanup levels that warrant resampling. This excavation project is located within the footprint of the future new KC-46 hangar, so **this document is critical and is delayed due to excessive delays on the Amendment to the NEWIOU Soil, Sediment and Surface Water ROD**.

— Site SD031 Soil Remedial Investigation/Feasibility Study: The PreDraft to Air Force Service Center was changed to 24 May 2019, the Agency Comment due date was changed to 30 August 2019 to allow time for complicated regulatory comments. The Draft Final and Final due dates did not change. Mr. Anderson noted that there is the potential for a new taxiway to be proposed in front of this site; the Air Force is using lessons learned from the KC-46 hangar planning to anticipate what may happen if approved. **This document is important and although not time-critical, must be completed during the current contract**.

— Fourth Five-Year Review Report for Multiple Groundwater, Soil, and Sediment Sites: No change was made to the schedule. The Water Board has accepted all Air Force responses to their comments. The Air Force is awaiting acceptance of respective RTCs from DTSC and EPA. Ms. Burke noted that the EPA has TechLaw's comments, and expects to provide feedback the following week. **This document is very important but not critical**.

— Addendum to the Site SS016 Groundwater Remedial Design/Remedial Action Work Plan: The Response to Comment and Draft Final due dates were changed to 3 July 2019, the Final due date was changed to 5 August 2019. Ms. Constantinescu noted that the Water Board approved responses to comments on 12 May. Ms. Burke noted that the EPA approved the responses to comments on 12 June. Mr. Duke noted that once all agencies accept the Air Force's responses to their comments, the Final document can be submitted and sent to MILCON for budgeting with a note that this is changing the remedy for the site.

— Potrero Hills Annex (FS, PP, and ROD): No change was made to the schedule; Mr. Anderson noted that the contractor has issued a proposal to close the groundwater component of the site using the Water Board Low-Threat Closure Policy. The Water Board had no additional input.

— Quarterly Newsletters (July 2019): There is no change in the schedule.

— 2017 Annual Groundwater Remediation Implementation Status Report (GRISR): The Final document was submitted on 20 May 2019. This document will be moved to the History section next month.

— 2018 Annual GRISR: There was no change in schedule. Agency comments are due on 8 July 2019; however, Mr. Duke reminded everyone that anything they can do to expedite review and submittal of comments will be most appreciated, and requested to be notified as soon as possible if anyone needs more time. The team will schedule a tentative conference call in early July to discuss and get ahead of initial comments in order to expedite the remaining versions. The Final document must be submitted by the end of the fiscal year (September 2019).

— Site SD043 Remedial Action Completion Report: There was no change in the schedule. The EPA and DTSC have submitted comments; the Water Board had no comments.

— Site SS046 Remedial Action Completion Report and Well Decommissioning Work Plan: There was no change to the schedule. The Water Board reviewed the decommissioning portion and will have no additional comments. EPA submitted comments. DTSC's comments are overdue. The EPA suggested providing a redline version with the submittal of the RTCs and Final document to expedite review. Mr. Wray noted that this document is tied to expiring funds, so the Final needs to be submitted as scheduled.

— 2018 Annual Site LF007 Corrective Action Management Unit Inspection, Monitoring, and Maintenance Report: The Predraft to AF/Service Center due date was changed to 31 May 2019 to reflect actual submittal; the AF/Service Center Comments due date was changed to 14 June 2019. The rest of the schedule was changed accordingly.

— Site SD043 Site Closure Report: A schedule was assigned to the previously TBD dates; the Predraft was submitted to the AF/Service Center on 12 June 2019. This document will follow the SD043 RACR.

— Site LF008 Response Complete Report: This is a new document. Latonya Coleman of CH2M will be the document lead. The Predraft to AF/Service Center is due on 1 July 2019.

— Site SS014 POCO Subsites 2, 4, and 5 Closure Report: There was no change to the schedule. Water Board comments were received on 13 June 2019. The Air Force will try to send RTCs by the end of the month. Ms. Constantinescu will send the Water Board's No Further Action (NFA) worksheet template. This document will not close the entire SS014 site, but will provide the information necessary when the site is ready for closure of the various subsites.

MOVED TO HISTORY:

— Site LF006 Technology Demonstration Construction Completion Report

2. CURRENT PROJECTS

Treatment Plant Operation and Maintenance Update

South Base Boundary Groundwater Treatment Plant, May 2019 (see Attachment 3)

The South Base Boundary Groundwater Treatment Plant (SBBGWTP) performed at 95.6% uptime, and 6.1 million gallons of groundwater were extracted and treated in May 2019. All treated water was discharged to Union Creek. The average flow rate for the SBBGWTP was 164.9 gallons per minute (gpm). Electrical power usage was 15,102 kilowatt hours (kWh), and approximately 12,775 pounds of CO_2 were created (based on DOE calculation). Approximately 0.9 pound of volatile organic compounds (VOCs) was removed in May. The total mass of volatile organic compounds (VOCs) removed since startup of the system is 516.5 pounds.

Beginning in May 2019, expansion activities began at the SBBGWTP. Troubleshooting was also performed on two Site SS030 extraction wells. Details can be found in Attachment 3.

No optimization activities are reported for the month of May 2019.

Central Groundwater Treatment Plant, May 2019 (see Attachment 4)

The Central Groundwater Treatment Plant (CGWTP) performed at 99.2% uptime with approximately 1,061,670 gallons of groundwater extracted and treated in May 2019. All treated water was discharged to the storm sewer system which discharges to Union Creek. The average flow rate for the CGWTP was 27.5 gpm. Electrical power usage was 2055 kWh for all equipment connected to the Central Plant, and approximately 2409 pounds of CO_2 were generated. Approximately 2.8 pounds of VOCs were removed from groundwater by the treatment plant in May. The total mass of VOCs removed since the startup of the system is 11,520 pounds.

On 6 May, the CGWTP was shut down to repair a leak from the threaded fitting on the main transfer pump within the treatment compound. After repairs were made, the system was restarted and no leaks were observed.

Optimization Activities for CGWTP: The DP039 bioreactor continues to operate in a four-week “pulsed mode.” No other optimization activities are reported for the month of May 2019.

LF007C Groundwater Treatment Plant, May 2019

The Subarea LF007C Groundwater Treatment Plant (LF007C GWTP) has been shut down due to the presence of vernal pools above the treatment area. There is no report for May 2019.

The vernal pools have dissipated, and the system restarted to collect samples for June, then was shut down again. If TPH concentrations are within permissible parameters, the Air Force will resume normal operation of the LF007C GWTP. The carbon filter will be changed prior to restarting.

ST018 Groundwater (MTBE) Treatment Plant, May 2019 (see Attachment 5)

Site ST018 (MTBE) Treatment Plant (ST018 GWTP) performed at 100% uptime with approximately 226,260 gallons of groundwater extracted in May 2019. All groundwater was discharged to the Fairfield – Suisun Sewer District. The average flow rate for the ST018 GWTP was 5.8 gpm. Electrical power usage for the month was 130 kWh for all equipment connected to the ST018 GWTP. The total CO_2 equivalent, including an estimate for the carbon change-out, equates to approximately 96 pounds. Approximately 0.30 pound of MTBE, BTEX, VOCs, and TPH was removed in May by the treatment plant, and approximately 0.07 pound of MTBE-only was removed from groundwater. The total BTEX, MTBE and TPH mass removed since the startup of the system is 47.4 pounds, and the total MTBE mass removed since startup of the system is 11.6 pounds.

Note: Electrical power use at the ST018 GWTP is only for the alarm system and a pump that pushes influent tank water to the Fairfield-Suisun Sanitary Sewer line. The four groundwater extraction pumps in the system are all solar powered.

The system was shut down briefly on 1 May to replace the float switch, and restarted on 2 May.

No optimization activities are reported for the month of May 2019.

3. Presentations:

A) Program Update: Activities Completed, In Progress, and Upcoming (see Attachment 6)

Mr. Wray reported on the status of fieldwork and documents that have been completed, are in progress, or upcoming. Please refer to Attachment 6 for the full briefing,

4. New Action Item Review

1. Ms. Royer will follow up on the TPH motor oil detection limits at the Central Groundwater Treatment Plant with the project chemist.

2. Mr. Duke to contact Air Force Real Property Address regarding easement access at Site LF007C.

5. PROGRAM ISSUES/UPDATE

Mr. Fries confirmed retirement date and last day in office will be 2 July 2019. He will work with Mr. Forrester to ensure document reviews continue during the transition.

Mr. Duke will not be able to attend the July teleconference.

6. Action Items

Item #	Responsible	Action Item Description	Due Date	Status
1.	Monika O'Sullivan	Ms. O'Sullivan to provide updates on PFOS and PFOA as she becomes aware of them.	Ongoing	Open
2.	Lonnie Duke	Mr. Duke will continue to provide design and construction information for the KC-46 Hangar for agency input ahead of the Air Force/Civil Engineering awarding the construction contract.	Ongoing	Open
3.	All	All PMs for all agencies will elevate to their management any suggestions for keeping document reviews on schedule going forward.	Ongoing	Open
4.	Ms. Royer	Ms. Royer will follow up on the TPH motor oil detection limits at the Central Groundwater Treatment Plant with the project chemist.	17 July 2019	Open

5.	Mr. Duke	Mr. Duke to contact Air Force Real Property Address regarding easement access at Site LF007C.	17 July 2019	Open

TRAVIS AIR FORCE BASE
ENVIRONMENTAL RESTORATION PROGRAM
RESTORATION PROGRAM MANAGER'S MEETING

The RPM face-to-face meeting is scheduled for 9:30 AM PST on 19 June 2019.
The call-in number is 1-866-203-7023. Enter the Participation code 5978-75-9736 then enter #.

AGENDA

1. ADMINISTRATIVE

   A. INTRODUCTIONS
   B. PREVIOUS MEETING MINUTES
   C. ACTION ITEM REVIEW
   D. MASTER MEETING AND DOCUMENT SCHEDULE REVIEW

2. CURRENT PROJECTS

   TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE

3. PRESENTATIONS

   PROGRAM UPDATE:
   DOCUMENTS & ACTIVITIES COMPLETED, IN PROGRESS AND PLANNED

4. NEW ACTION ITEM REVIEW

5. PROGRAM/ISSUES/UPDATE

   MEETING SCHEDULE

NOTES: AFTER THE RPM MEETING, BASED ON THE DISCUSSION DURING THE REVIEW OF THE MASTER MEETING AND DOCUMENT SCHEDULE, WE ALLOW TIME TO HOLD A SEPARATE SPLINTER MEETING TO DISCUSS RESPONSES TO AGENCY COMMENTS ON THOSE DOCUMENTS THAT ARE IN PROGRESS, OR OTHER ISSUES IF NEEDED. ALL PARTICIPANTS ARE WELCOME TO PARTICIPATE.

(2019)

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting[1] (Begins at time noted)	RPM Teleconference (Begins at time noted)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
—	01-16-19	—
02-13-19	—	—
—	03-20-19	—
04-18-19 (Thursday 2:00 PM)	—	04-18-19
—	05-15-19	—
06-19-19	—	—
—	07-17-19	—
08-21-19	—	—
—	09-18-19	—
10-16-19	—	May through October[2]
—	11-20-19	—
—	—	—

[1] Note: Meetings and teleconferences will be held at 09:30 AM on the third Wednesday of each month unless otherwise noted.

[2] Note: Tentative RAB tour(s) during construction season.

(2020)

Annual Meeting and Teleconference Schedule

Monthly RPM Meeting[1] (Begins at time noted)	RPM Teleconference (Begins at time noted)	Restoration Advisory Board Meeting (Begins at 7:00 p.m.) (Poster Session at 6:30 p.m.)
—	01-15-20	—
02-19-20	—	—
—	03-18-20	—
04-16-20 (Thursday 2:00 PM)	—	04-16-20
—	05-20-20	—
06-17-20	—	—
—	07-15-20	—
08-19-20	—	—
—	09-16-20	—
10-21-20	—	May through October[2]
—	11-18-20	—
—	—	—

[1] Note: Meetings and teleconferences will be held at 09:30 AM on the third Wednesday of each month unless otherwise noted.

[2] Note: Tentative RAB tour(s) during construction season.

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
Life Cycle	**Community Relations Plan Update Travis AFB, Glenn Anderson CH2M, Jill Dunphy**	**Amendment to the NEWIOU Soil ROD for the Travis AFB ERP Sites SS016 and SD033 Travis AFB, Glenn Anderson CH2M, Latonya Coleman**	**No Further Action Soil ROD for Old Skeet Range (TS060 MRA) Travis AFB, Glenn Anderson**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	08-23-16	02-28-18	05-18-18
AF/Service Center Comments Due	09-07-16	03-30-18	06-01-18
Draft to Agencies	09-28-16 (03-22-18)	06-22-18	6-25-18
Draft to RAB	09-28-16 (03-22-18)	06-22-18	6-25-18
Agency Comments Due	10-28-16 (04-27-18)	08-22-18	11-30-18
Response to Comments Meeting	**TBD**	**09-06-18**	**01-16-19**
Agency Concurrence with Remedy	NA	NA	NA
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**
Response to Comments Due	TBD	TBD	06-13-19
Draft Final Due	TBD	TBD	06-13-19
Final Due	TBD	TBD	07-15-19

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS		
Life Cycle	**Site SS016 Remedial Design/Remedial Action Work Plan** **Travis AFB, Glenn Anderson** **CH2M, Doug Berwick** **CAPE, Meg Greenwald**	**Site SD031 Soil Remedial Investigation/Feasibility Study** **Travis AFB, Glenn Anderson** **CH2M, Rick Sturm**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	06-04-18	05-24-19
AF/Service Center Comments Due	06-18-18	06-10-19
Draft to Agencies	07-31-18	06-26-19
Draft to RAB	07-31-18	06-26-19
Agency Comments Due	08-30-18	07-29-19
Response to Comments Meeting	**09-19-18**	08-21-19
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	10-24-18	09-05-19
Draft Final Due	10-24-18	09-05-19
Final Due	TBD	10-07-19

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS		
Life Cycle	**Fourth Five-Year Review Report for Multiple Groundwater, Soil, and Sediment Sites Travis AFB, Glenn Anderson Tetra Tech, Joachim Eberharter**	**Addendum to the Site SS016 Groundwater Remedial Design/Remedial Action Work Plan Travis AFB, Lonnie Duke CH2M, Levi Pratt**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	03-14-18	12-12-18
AF/Service Center Comments Due	05-22-18	01-02-19
Draft to Agencies	06-05-18	02-22-19
Draft to RAB	06-05-18	02-22-19
Agency Comments Due	07-20-18	03-25-19
Response to Comments Meeting	**TBD**	**04-18-19**
Agency Concurrence with Remedy	NA	NA
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**
Response to Comments Due	TBD	06-12-19 (07-03-19)
Draft Final Due	TBD	06-12-19 (07-03-19)
Final Due	TBD	07-17-19 (08-05-19)

Travis AFB Master Meeting and Document Schedule

PRIMARY DOCUMENTS			
	Potrero Hills Annex Travis, Glenn Anderson		
Life Cycle	**FS**	**Proposed Plan**	**ROD**
Scoping Meeting	**180 days after Water Board Order Rescinded**	**+470 days**	**+735 days**
Predraft to AF/Service Center	+ 270 days	+530 days	+ 915 days
AF/Service Center Comments Due	+ 300 days	+560 days	+ 975 days
Draft to Agencies	+330 days	+590 days	+ 1035 days
Draft to RAB	+ 330 days	+590 days	+ 1035 days
Agency Comments Due	+390 days	+650 days	+ 1095 days
Response to Comments Meeting	**+ 405 days**	**+665 days**	**+ 1110 days**
Agency Concurrence with Remedy	NA	NA	+ 1130 days
Public Comment Period	NA	+735 to 765 days	NA
Public Meeting	**NA**	**+745 days**	**NA**
Response to Comments Due	+430 days	+695days	+ 1190 days
Draft Final Due	+430 days	+695 days	+ 1190 days
Final Due	+460 days	+725 days	+ 1250 days

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	**Quarterly Newsletter (July 2019) Travis, Glenn Anderson**	**2017 Annual GRISR Travis AFB, Glenn Anderson CH2M, Leslie Royer**	**2018 Annual GRISR Travis AFB, Glenn Anderson CH2M, Leslie Royer**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	06-18-19	05-09-18	05-06-19
AF/Service Center Comments Due	NA	06-11-18	05-20-19
Draft to Agencies	06-25-19	07-19-18	06-05-19
Draft to RAB	NA	07-19-18	06-05-19
Agency Comments Due	07-10-19	11-19-18 (01-31-19) (02-08-19)	07-08-19
Response to Comments Meeting	**07-17-19**	**01-16-19 (02-13-19)**	07-17-19
Response to Comments Due	07-17-19	05-20-19	08-14-19
Draft Final Due	NA	NA	NA
Final Due	07-18-19	05-20-19	08-14-19
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS			
Life Cycle	**Site SD043 Remedial Action Completion Report** **Travis AFB, Glenn Anderson** **CH2M, Levi Pratt**	**Site SS046 Remedial Action Completion Report and Well Decommissioning Work Plan** **Travis AFB, Glenn Anderson** **CH2M, Doug Berwick** **CAPE, Meg Greenwald**	**2018 Annual Site LF007 Corrective Action Management Unit Inspection, Monitoring, and Maintenance Report** **Travis AFB, Milton Clare** **CH2M, Levi Pratt**
Scoping Meeting	**NA**	**NA**	**NA**
Predraft to AF/Service Center	03-29-19	04-15-19	05-31-19
AF/Service Center Comments Due	04-12-19	04-22-19	06-14-19
Draft to Agencies	05-08-19	05-09-19	07-01-19
Draft to RAB	05-08-19	05-09-19	07-01-19
Agency Comments Due	06-07-19	06-10-19	08-01-19
Response to Comments Meeting	06-19-19	06-19-19	08-21-19
Response to Comments Due	07-09-19	07-12-19	09-09-19
Draft Final Due	NA	NA	NA
Final Due	07-09-19	07-12-19	09-09-19
Public Comment Period	NA	NA	NA
Public Meeting	**NA**	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS		
Life Cycle	**Site SD043 Site Closure Report Travis AFB, Glenn Anderson CH2M, Levi Pratt**	**Site LF008 Response Complete Report Travis AFB, Glenn Anderson CH2M, Latonya Coleman**
Scoping Meeting	**NA**	**NA**
Predraft to AF/Service Center	06-12-19	07-01-19
AF/Service Center Comments Due	06-28-19	07-16-19
Draft to Agencies	07-25-19	07-31-19
Draft to RAB	07-25-19	07-31-19
Agency Comments Due	08-26-29	08-30-19
Response to Comments Meeting	09-18-19	09-18-19
Response to Comments Due	10-02-19	10-04-19
Draft Final Due	NA	NA
Final Due	10-02-19	10-04-19
Public Comment Period	NA	NA
Public Meeting	**NA**	**NA**

Travis AFB Master Meeting and Document Schedule

INFORMATIONAL DOCUMENTS	
Life Cycle	**Site SS014 Subsites 2, 4, and 5 POCO Site Closure Evaluation Report** **Travis AFB, Glenn Anderson** **CH2M, Tony Chakurian**
Scoping Meeting	**NA**
Predraft to AF/Service Center	04-10-19
AF/Service Center Comments Due	04-24-19
Draft to Agencies	05-02-19
Draft to RAB	05-02-19
Agency Comments Due	06-03-19
Response to Comments Meeting	06-19-19
Response to Comments Due	07-11-19
Draft Final Due	NA
Final Due	07-11-19
Public Comment Period	NA
Public Meeting	**NA**

Travis AFB Master Meeting and Document Schedule

HISTORY	
Life Cycle	**Site LF006 Technology Demonstration Construction Completion Report** **Travis AFB, Glenn Anderson** **CH2M HILL, Levi Pratt**
Scoping Meeting	**NA**
Predraft to AF/Service Center	12-19-18
AF/Service Center Comments Due	01-09-19
Draft to Agencies	03-05-19
Draft to RAB	03-05-19
Agency Comments Due	04-04-19
Response to Comments Meeting	04-18-19
Response to Comments Due	05-15-19 (04-19-19)
Draft Final Due	NA
Final Due	05-15-19 (04-19-19)
Public Comment Period	NA
Public Meeting	**NA**

South Base Boundary Groundwater Treatment Plant Monthly Data Sheet

Report Number: 223 **Reporting Period: 1 May 2019 – 28 May 2019** **Date Submitted: 12 June 2019**

This monthly data sheet presents information regarding the South Base Boundary Groundwater Treatment Plant (SBBGWTP) and associated remedial process optimization (RPO) activities.

System Metrics

Table 1 presents operational data from the May 2019 reporting period.

Table 1 – Operations Summary – May 2019

Initial Data Collection:	5/1/2019 14:20	**Final Data Collection:**	5/28/2019 10:45
Operating Time:	Percent Uptime:	Electrical Power Usage:	
SBBGWTP: 616 hours	**SBBGWTP:** 95.6%	**SBBGWTP:**	15,102 kWh (12,775 lbs CO_2 generated[a])
Gallons Treated: **6.1 million gallons**		Gallons Treated Since July 1998: **1,116 million gallons**	
Volume Discharged to Union Creek: **6.1 million gallons**		Gallons Treated from Other Sources: **0 gallons**	
VOC Mass Removed: **0.9 lbs**[b]		VOC Mass Removed Since July 1998: **516.5 lbs**	
Rolling 12-Month Cost per Pound of Mass Removed: **$13,526**[c]			
Monthly Cost per Pound of Mass Removed: **$19,356**[c]			

lbs = pounds

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 1,600 pounds of GHG from GAC change out services averaged to a per month basis.

[b] Calculated using May 2019 EPA Method SW8260C analytical results.

[c] Costs include operations and maintenance, carbon change out, reporting, analytical laboratory, project management, and utility costs related to operation of the system.

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

Table 2 – SBBGWTP Average Flow Rate (gpm)[a] – May 2019

FT005[b]				SS029		SS030	
EW01x05	Offline	EW743x05	Offline	EW01x29	Offline[c]	EW01x30	16.8
EW02x05	Offline	EW744x05	3.7	EW02x29	Offline[c]	EW02x30	1.7
EW03x05	Offline	EW745x05	13.5	EW03x29	2.9	EW03x30	Offline[d]
EW731x05	6.9	EW746x05	Offline	EW04x29	6.5	EW04x30	24.3
EW732x05	Offline	EW2291x05	3.2	EW05x29	8.0	EW05x30	17.7
EW733x05	Offline	EW2782x05	6.1	EW06x29	7.6	EW2174x30	8.3
EW734x05	3.2	EW2783x05	8.8	EW07x29	12.9	EW711x30	8.1
EW735x05	11.2	EW2784x05	10.9			MW269x30	Offline[d]
EW736x05	Offline	EW2785x05	6.4				
EW737x05	Offline	EW2786x05	18.5				
EW742x05	Offline						
FT005 Total: 92.4				**SS029 Total: 37.9**		**SS030 Total: 76.9**	
SBBGWTP Average Monthly Flow[e]: 164.9 gpm							

[a] Flow rates presented are instantaneous measurements taken at the end of the reporting period.
[b] Most extraction wells at FT005 were taken offline in accordance with the *2008 Annual Remedial Process Optimization Report for the Central Groundwater Treatment Plant, North Groundwater Treatment Plant, and South Base Boundary Groundwater Treatment Plant.*
[c] Extraction wells taken off line because of persistent fouling of the well pumps and associated discharge piping.
[d] Extraction well were off line for maintenance.
[e] The average SBBGWTP groundwater flow rate was calculated using the Union Creek Discharge Totalizer and dividing it by the total time the system was operational.

gpm – gallons per minute
SBBGWTP – South Base Boundary Groundwater Treatment Plant

Table 3 presents a summary of system shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns

Location	Shutdown[a]		Restart[a]		Cause
	Date	Time	Date	Time	
SBBGWTP	21 May 2019	8:00	22 May 2019	12:00	SBBGWTP off line during installation of centrifugal particulate filter.

[a] Shutdown and restart times estimated based on field notes
SBBGWTP = South Base Boundary Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the SBBGWTP on 6 May 2019. Sample results are presented in Table 4. The total VOC concentration (18.17 µg/L) in the influent sample decreased from the April 2019 sample results (24.58 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 17 µg/L. TCE, cis-1,2-DCE, and chloroform were detected in the midpoint sampling location at low concentrations. No VOCs were detected in the effluent sample; however, TPH-g and TPH-d were detected at low concentrations less than discharge limit of 50 µg/L.

Beginning in May 2019, expansion activities began at SBBGWTP. Portions of the air stripper, pipe manifold, and old air blower were removed in preparation for the treatment plant upgrades. Between 21 and 22 May, the SBBGWTP was shut down to install a centrifugal particulate filter system on the influent process line. The expansion activities will continue through July 2019.

In May 2019, troubleshooting was performed on two Site SS030 extraction wells. The following list presents the maintenance activities and status of those extraction wells:

- EW03x30 – Flow meter is malfunctioning causing a low-flow alarm. The paddlewheel will be inspected and replaced, if necessary. Well is currently off line.
- MW269x30 – Pump is malfunctioning and needs to be replaced. The pump will be replaced at the end of May 2019. Well is currently off line.

Figure 1 presents the influent 1,2-DCA and TCE concentrations since January 2017. The 1,2-DCA and TCE concentrations have been sporadic and are dependent on seasonal variation and which wells are actively being extracted during the time of sampling. TCE concentrations have generally been increasing since March 2018, and 1,2-DCA concentrations were elevated between December 2017 and June 2018 and mostly non-detect from July through November 2018. 1,2-DCA concentrations were sporadic between December 2018 and May 2019.

Figure 2 presents a plot of influent VOC concentrations and average flow at the SBBGWTP over the past twelve (12) months. An overall increasing trend was observed for the VOC influent concentrations in the past 12 months. An overall increasing flow rate trend was observed in the past 12 months.

Optimization Activities

No optimization activities occurred at the SBBGWTP in May 2019.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as taking extraction pumps off line that are no longer necessary for contaminant plume capture.

Figure 3 presents the historical GHG production from the SBBGWTP. In May 2019, the SBBGWTP produced approximately 12,775 pounds of GHG, which includes approximately 1,600 pounds of GHG generated from GAC change out services averaged to a per month basis.

TABLE 4
Summary of Groundwater Analytical Data for May 2019 – South Base Boundary Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	6 May 2019 (µg/L)		
				Influent	Midpoint	Effluent
Halogenated Volatile Organics						
Bromodichloromethane	NA	0.29	0	ND	ND	ND
Chloroform	1.9	0.12	0	**0.19 J**	**0.27 J**	ND
1,1-Dichloroethane	0.50	0.15	0	ND	ND	ND
1,2-Dichloroethane	0.50	0.22	0	ND	ND	ND
1,1-Dichloroethene	0.50	0.14	0	ND	ND	ND
cis-1,2-Dichloroethene	0.50	0.15	0	**0.98 J**	**1.7**	ND
trans-1,2-Dichloroethene	0.50	0.11	0	ND	ND	ND
Tetrachloroethene	0.50	0.15	0	ND	ND	ND
1,1,1-Trichloroethane	0.50	0.19	0	ND	ND	ND
1,1,2-Trichloroethane	0.50	0.31	0	ND	ND	ND
Trichloroethene	0.65	0.13	0	**17**	**0.49 J**	ND
Vinyl Chloride	0.90	0.22	0	ND	ND	ND
Non-Halogenated Volatile Organics						
Benzene	0.50	0.13	0	ND	ND	ND
Ethylbenzene	0.50	0.15	0	ND	ND	ND
Toluene	0.50	0.25	0	ND	ND	ND
Xylenes	0.50	0.10 – 0.18	0	ND	ND	ND
Methyl Tert Butyl Alcohol	0.50	0.17	0	ND	ND	ND
Other						
Total Petroleum Hydrocarbons – Gasoline	50	10	0	NM	NM	**10 J**
Total Petroleum Hydrocarbons – Diesel	50	16	0	NM	NM	**44 J**
Total Petroleum Hydrocarbons – Motor Oil	100	160	0	NM	NM	ND

* In accordance with current National Pollutant Discharge Elimination System permit number CAG912002, Order number R2-2017-0048.

Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant
NA = not applicable
N/C = number of samples out of compliance with discharge limits
ND = not detected
NM = not measured
µg/L = micrograms per liter

Figure 1

SBBGWTP Influent 1,2-DCA and TCE Concentrations Since January 2017

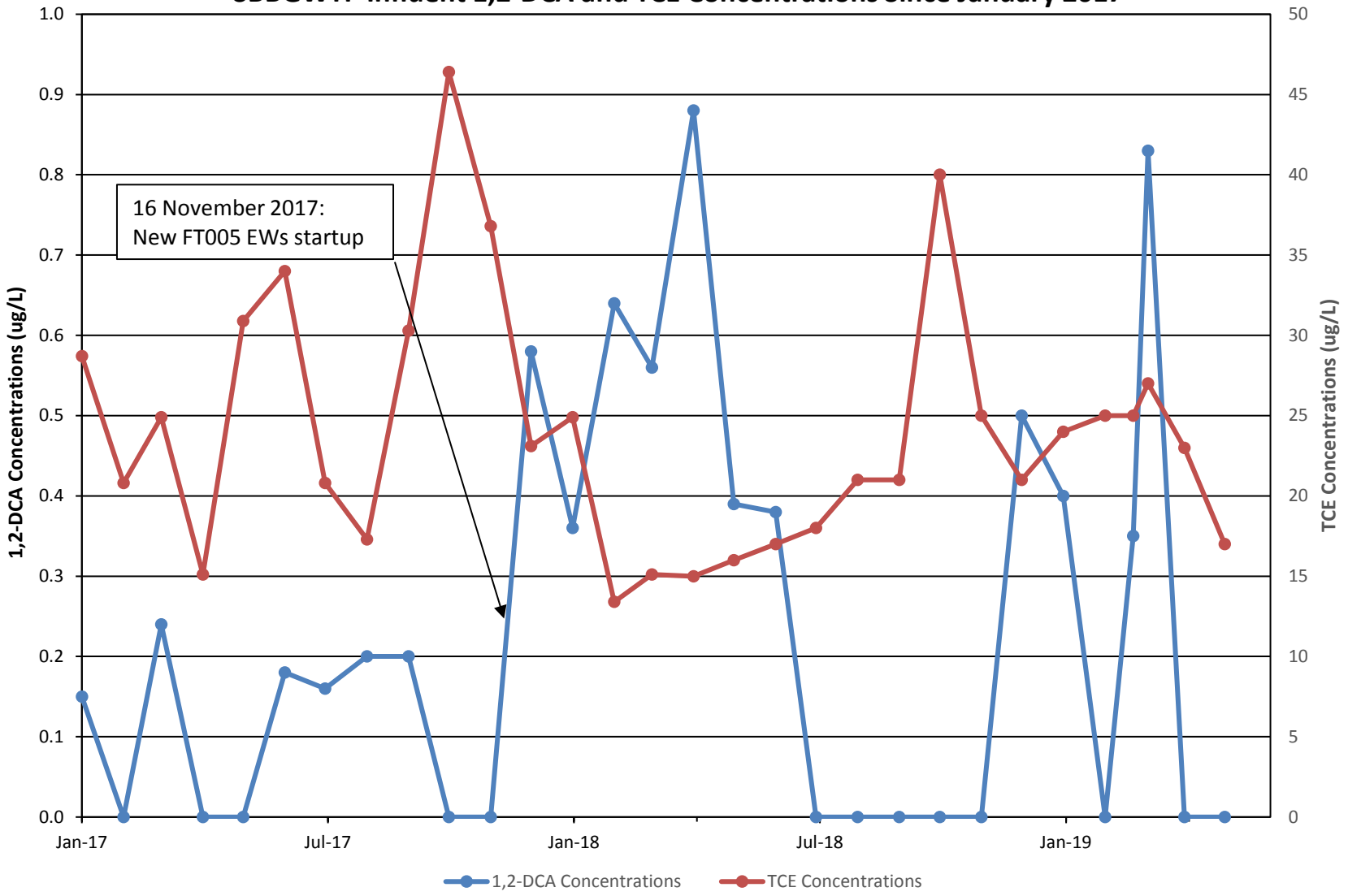


Figure 2

SBBGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

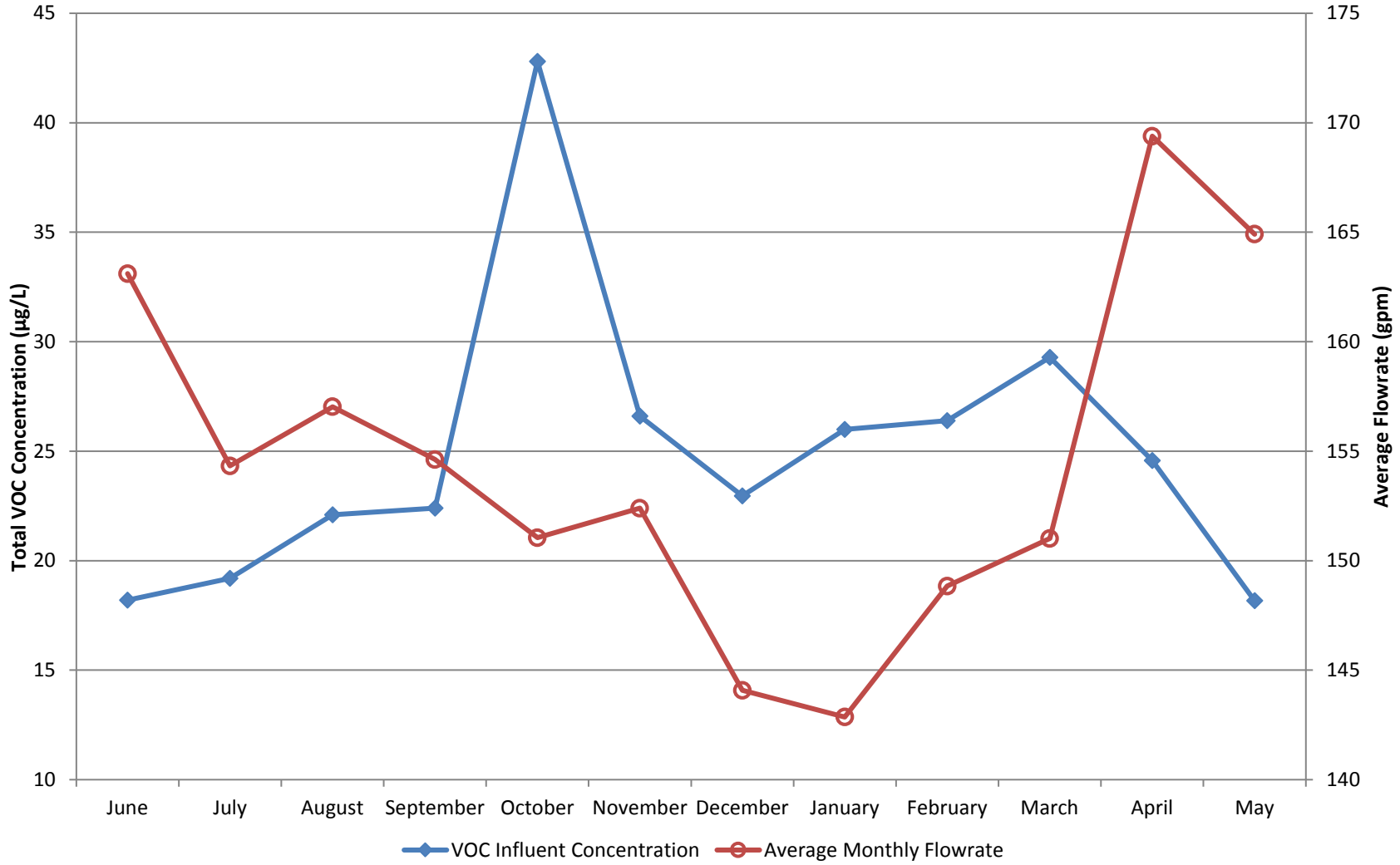
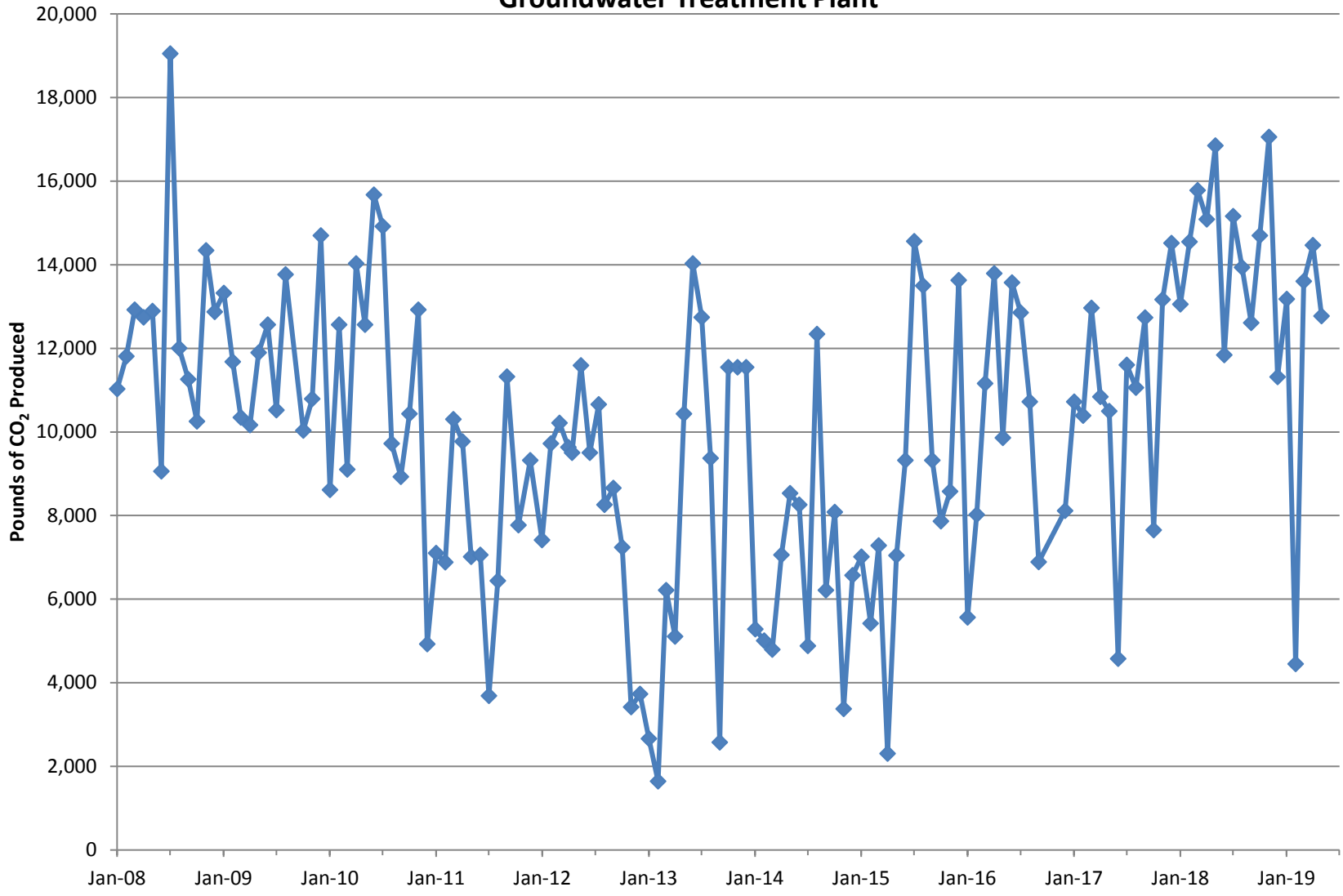


Figure 3

Equivalent Pounds of Carbon Dioxide Produced by the South Base Boundary Groundwater Treatment Plant



Central Groundwater Treatment Plant Monthly Data Sheet

Report Number: 238 **Reporting Period: 1 May 2019 – 28 May 2019** **Date Submitted: 12 June 2019**

This monthly data sheet presents information regarding the Central Groundwater Treatment Plant (CGWTP) and its associated technology demonstrations. The ongoing technology demonstrations related to the CGWTP include various emulsified vegetable oil (EVO) injections and two (2) bioreactor treatability studies.

System Metrics

Table 1 presents operational data from the May 2019 reporting period.

Table 1 – Operations Summary – May 2019

Initial Data Collection:	5/1/2019 11:00		**Final Data Collection:**	5/28/2019 11:25	
Operating Time:		Percent Uptime:		Electrical Power Usage:	
CGWTP:	643 hours	**CGWTP:**	99.2%	**CGWTP:**	2,055 kWh (2,409 lbs CO_2 generated[a])

Gallons Treated (discharge to storm sewer): **1,061,670 gallons**

Gallons Treated Since January 1996: **569.6 million gallons**

VOC Mass Removed from groundwater: **2.8 lbs**[b]

VOC Mass Removed Since January 1996: **2,834 lbs from groundwater**; **8,686 lbs from vapor**

Rolling 12-Month Cost per Pound of Mass Removed: $4,509[c]

Monthly Cost per Pound of Mass Removed: $3,397[c]

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG. Value also includes approximately 888 pounds of GHG from GAC change out services averaged to a per month basis.
[b] Calculated using May 2019 EPA Method SW8260C analytical results.
[c] Costs include operations and maintenance, carbon change out, reporting, analytical laboratory, project management, and utility costs related to operation of the system.

Table 2 presents individual extraction well flow rates during the monthly reporting period.

Table 2 – CGWTP Average Flow Rates[a] – May 2019

Location	Average Flow Rate Groundwater (gpm)
EW001x16	12.6
EW002x16	7.4
EW003x16	0.2
EW605x16	5.3
EW610x16	2.3
CGWTP	27.5

[a] Flow rates calculated by dividing total gallons processed by system operating time for the month or the average of the instantaneous readings.
gpm = gallons per minute

Table 3 presents a summary of shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns

Location	Shutdown[a]		Restart		Cause
	Date	Time	Date	Time	
CGWTP	6 May 2019	12:00	6 May 2019	17:00	Repair leak on connection at main transfer pump

-- = Date/Time not recorded
[a] Shutdown and restart times estimated based on field notes
CGWTP = Central Groundwater Treatment Plant

Table 4 presents a twelve-month summary of the Site DP039 bioreactor recirculation well pulsing dates.

Table 4 – Summary of DP039 Bioreactor "Pulsed Mode" Operations

Location	Pulse-on Date	Pulse-off Date
MW750x39	16 April 2018	14 May 2018
	12 June 2018	9 July 2018
	7 August 2018	6 September 2018
	1 October 2018	30 October 2018
	27 November 2018	24 December 2018
	23 January 2019	26 February 2019
	18 March 2019	15 April 2019
	13 May 2019	

MW = Monitoring Well

Summary of O&M Activities

Monthly groundwater treatment samples were collected at the CGWTP on 7 May 2019. Sample results are presented in Table 5. The total VOC concentration (315.7 µg/L) in the May 2019 influent sample has increased from the April 2019 sample (198.5 µg/L). TCE was the primary VOC detected in the influent sample at a concentration of 270 µg/L. Bromomethane (0.22 J µg/L) was detected in the sample after the second carbon vessel. No VOCs were detected in the sample collected after the first carbon vessel or in the effluent sample. However, TPH-d (27.0 J µg/L) was detected in the effluent sample. Travis AFB will continue to monitor influent, midpoint, and effluent concentrations at the CGWTP for carbon breakthrough, though the carbon treatment remained effective in May 2019.

On 6 May, the CGWTP was shut down to repair a leak from the threaded fitting on the main transfer pump within the treatment compound. After the repairs were made, the system was restarted, and no leaks were observed.

Figure 1 presents a plot of influent concentrations (total VOCs) and the influent flow rate at the CGWTP versus time for the past twelve (12) months. The influent concentrations show an increasing trend over the past 12 months along with a decreasing trend for the flow rate through the treatment plant.

The Site DP039 subgrade biogeochemical reactor (SBGR), also known as a bioreactor, continued to operate in a four-week "pulsed mode" to optimize distribution of total organic carbon (TOC). The bioreactor was brought back on line on 13 May 2019.

Optimization Activities

No optimization activities occurred at the CGWTP in May 2019.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as bioreactors and EVO injection well networks.

Figure 2 presents the historical GHG production from the systems associated with the CGWTP. The CGWTP produced approximately 2,409 pounds of GHG during May 2019.

TABLE 5
Summary of Groundwater Analytical Data for May 2019 – Central Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	7 May 2019 (µg/L) Influent	After Carbon 1 Effluent	After Carbon 2 Effluent	System Effluent
Halogenated Volatile Organics							
Acetone	NA	1.9 – 3.8	0	ND	ND	ND	ND
Bromomethane	NA	0.21 – 0.42	0	ND	ND	**0.22 J**	ND
Chloroform	1.9	0.16 – 0.32	0	ND	ND	ND	ND
1,2-Dichlorobenzene	NA	0.15 – 0.30	0	**0.33 J**	ND	ND	ND
1,3-Dichlorobenzene	NA	0.13 – 0.26	0	**0.32 J**	ND	ND	ND
1,4-Dichlorobenzene	NA	0.16 – 0.32	0	ND	ND	ND	ND
Bromodichloromethane	NA	0.17 – 0.34	0	ND	ND	ND	ND
1,1-Dichloroethane	0.50	0.22 – 0.44	0	ND	ND	ND	ND
1,2-Dichloroethane	0.50	0.13 – 0.26	0	ND	ND	ND	ND
1,1-Dichloroethene	0.50	0.23 – 0.46	0	**0.82 J**	ND	ND	ND
cis-1,2-Dichloroethene	0.50	0.15 – 0.30	0	**41**	ND	ND	ND
trans-1,2-Dichloroethene	0.50	0.15 – 0.30	0	**2.7**	ND	ND	ND
Tetrachloroethene	0.50	0.20 – 0.40	0	**0.53 J**	ND	ND	ND
1,1,1-Trichloroethane	0.50	0.16 – 0.32	0	ND	ND	ND	ND
1,1,2-Trichloroethane	0.50	0.27 – 0.54	0	ND	ND	ND	ND
Trichloroethene	0.65	0.16 – 0.32	0	**270**	ND	ND	ND
Vinyl Chloride	0.90	0.10 – 0.20	0	ND	ND	ND	ND
Non-Halogenated Volatile Organics							
Benzene	0.50	0.16 – 0.32	0	ND	ND	ND	ND
Ethylbenzene	0.50	0.16 – 0.32	0	ND	ND	ND	ND
Toluene	0.50	0.17 – 0.34	0	ND	ND	ND	ND
Total Xylenes	0.50	0.15 – 0.38	0	ND	ND	ND	ND
Methyl Tertiary Butyl Ether	0.50	0.25 – 0.50	0	ND	ND	ND	ND
Other							
Total Petroleum Hydrocarbons – Gasoline (C6 – C10)	50	10	0	NM	NM	NM	ND
Total Petroleum Hydrocarbons – Diesel (C10 – C28)	50	15	0	NM	NM	NM	27 J
Total Petroleum Hydrocarbons – Motor Oil (C28 – C40)	100	160	0	NM	NM	NM	ND

* In accordance with current National Pollutant Discharge Elimination System permit number CAG912002, Order number R2-2017-0048.

Notes:

J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant

NA = not applicable

N/C = number of samples out of compliance with discharge limits

ND = not detected

NM = not measured

µg/L = micrograms per liter

mg/L = milligrams per liter

Figure 1

CGWTP Total VOC Influent Concentrations and Average Flowrate Twelve Month History

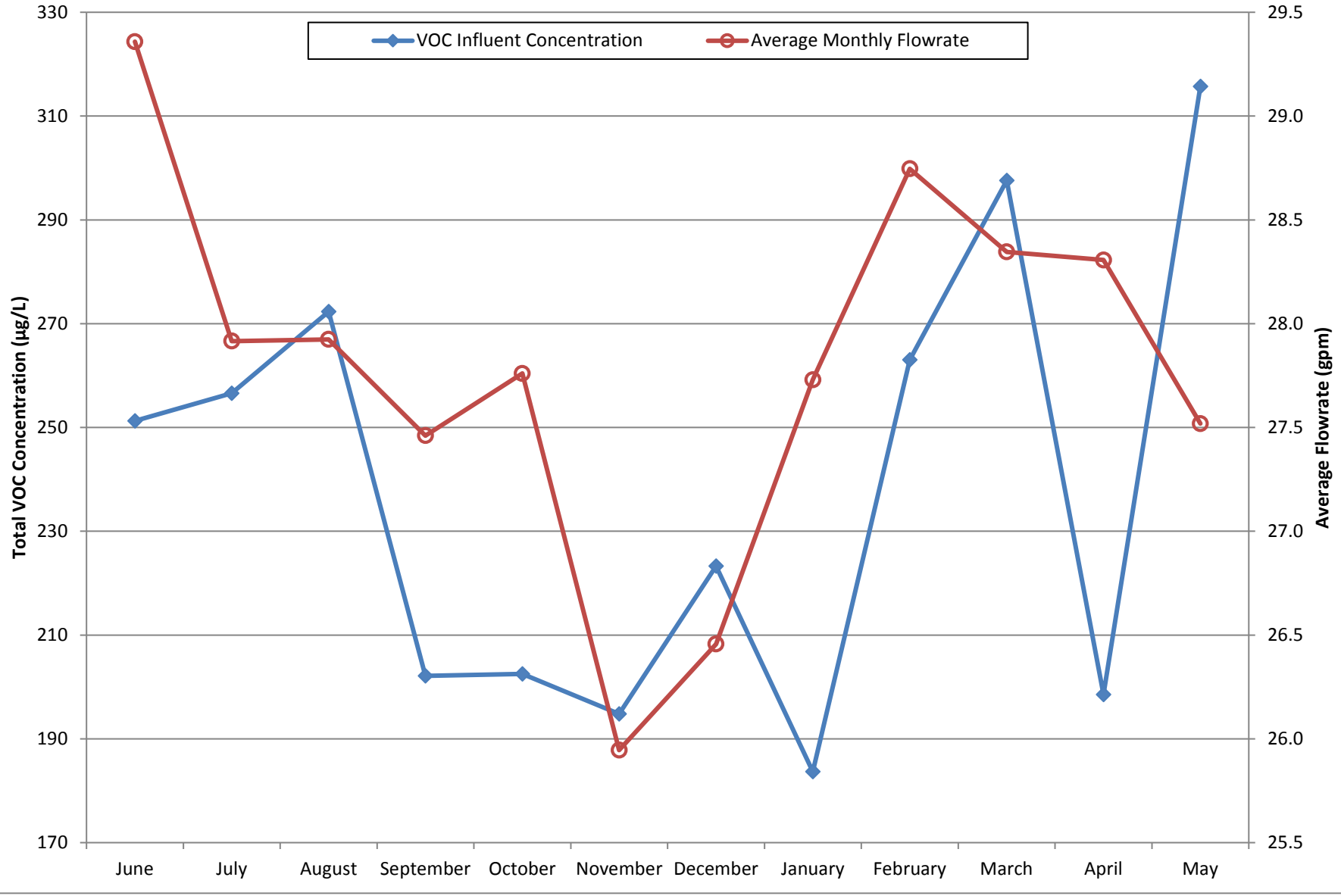
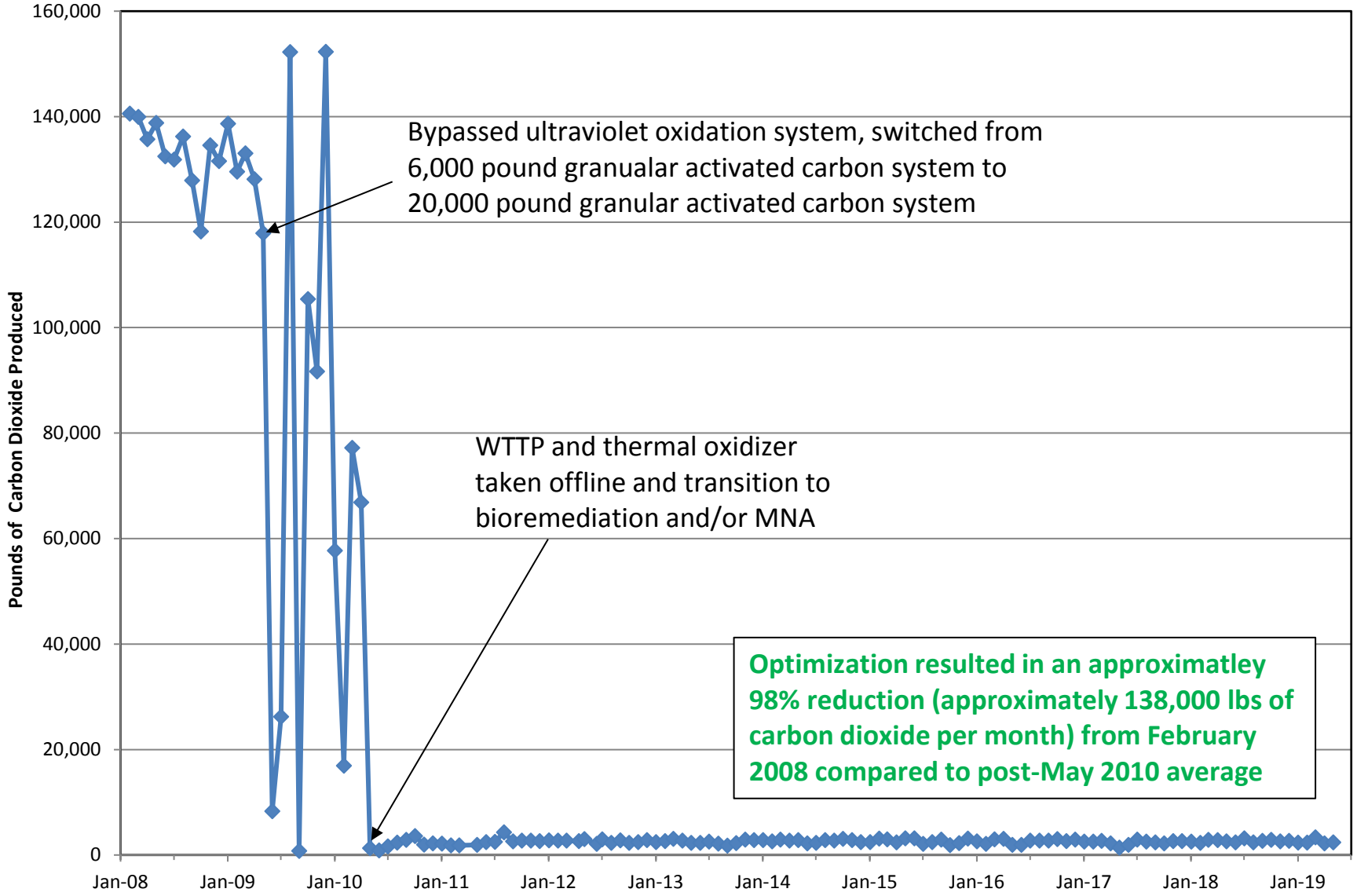


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Central Groundwater Treatment Plant



Site ST018 Groundwater Treatment Plant Monthly Data Sheet

Report Number: 099 **Reporting Period: 1 May 2019 – 28 May 2019** **Date Submitted: 12 June 2019**

This monthly data sheet presents information regarding the Site ST018 Groundwater Treatment Plant (ST018GWTP).

System Metrics

Table 1 presents operation data from the May 2019 reporting period.

Table 1 – Operations Summary – May 2019

Initial Data Collection:	5/1/2019 12:05	**Final Data Collection:**	5/28/2019 9:20
Operating Time:		Percent Uptime:	Electrical Power Usage:
ST018GWTP: 645 hours		**ST018GWTP: 100**%	**ST018GWTP:** 130 kWh (96 lbs CO_2 generated[a])
Gallons Extracted: **226,260 gallons**		Gallons Extracted Since March 2011: **17.3 million gallons**	
Volume Discharged to Sanitary Sewer: **226,260 gallons**		Final Totalizer Reading: **17,274,589 gallons**	
Cumulative Volume Discharged to Sanitary Sewer since 1 November 2014: **10,778,415 gallons**			
MTBE, BTEX, VOC, TPH Mass Removed: **0.30 lbs**[b]		MTBE, BTEX, VOC, TPH Mass Removed Since March 2011: **47.4 lbs**	
MTBE (Only) Removed: **0.07 lbs**[b]		MTBE (Only) Mass Removed Since March 2011: **11.6 lbs**	
Rolling 12-Month Cost per Total Pounds of Mass Removed: $18,638[bc]			
Monthly Cost per Pound of Mass Removed: $12,295[bc]			

[a] SiteWise™ estimate that 1 kilowatt hour generated produces 0.74 pounds of GHG.
[b] Calculated using May 2019 EPA Method SW8260C and SW8015B analytical results.
[c] Costs include operations and maintenance, reporting, analytical laboratory, project management, and utility costs related to operation of the system.

kWh = kilowatt hour
lbs = pounds

Table 2 presents individual extraction well flow rates along with the average system flow during the monthly reporting period.

Table 2 – ST018GWTP Average Flow Rates – May 2019

Location	Average Flow Rate Groundwater (gpm)[a]	Hours of Operation
EW2014x18	1.0	645
EW2016x18	0.9	645
EW2019x18	1.4	645
EW2333x18	1.5	645
ST018GWTP	5.8	645

[a] Flow rates calculated by dividing total gallons processed by amount of operating time of the pump/system.

gpm = gallons per minute
ST018GWTP = Site ST018 Groundwater Treatment Plant

Table 3 presents a summary of shutdowns during the monthly reporting period.

Table 3 – Summary of System Shutdowns

Location	Shutdown[a]		Restart[a]		Cause
	Date	Time	Date	Time	
ST018GWTP	None.	--		--	

-- = Time not recorded

[a] Shutdown and restart times estimated based on field notes
ST018GWTP = Site ST018 Groundwater Treatment Plant

Summary of O&M Activities

Monthly groundwater discharge samples were collected at the ST018GWTP on 6 May 2019. Because the extracted groundwater is no longer treated with carbon prior to discharge to the sanitary sewer, only discharge samples are now collected, rather than influent and effluent samples. Results are presented in Table 4. The complete May 2019 laboratory data report is available upon request. The MTBE discharge concentration during the May 2019 sampling event was 35 µg/L, which is an increase from the April 2019 sample result of 12 µg/L. Several other VOCs, TPH-g, and TPH-d were detected in the system discharge sample, as noted in Table 4.

The Fairfield-Suisun Sewer District does not currently have a discharge limit for MTBE, but a limit of 6,400 µg/L is advised based on worker health and safety. Travis AFB will continue to monitor discharge contaminant concentrations to maintain compliance with the Fairfield-Suisun Sewer District discharge permit.

On 26 April, the ST018GWTP was shut down because the treatment plant containment float switch failed. The system was restarted on 1 May 2019, and the float switch was replaced on 2 May 2019.

Figure 1 presents plots of the average flow rate and total extracted contaminant (MTBE, TPH-g, TPH-d, TPH-mo, BTEX, and VOCs) and extracted MTBE concentrations at the ST018GWTP over the past twelve (12) months. The average flow rate through the ST018GWTP has been cyclical with flow rates decreasing during the dry season (summer and fall) and increasing during the rainy season (winter and spring). The overall average flow rates in the past 12 months show an increasing trend with a fairly steadily increasing trend since

December 2018. The extracted MTBE concentrations and extracted total concentrations have generally been fluctuating over the past 12 months with overall increasing trend.

Optimization Activities

No optimization activities occurred at the ST018GWTP in May 2019.

Sustainability

Travis AFB is committed to decreasing the amount of GHG produced directly (waste streams discharging GHG) or indirectly (GHG produced as related to electrical energy consumption) from all systems across Travis AFB. Travis AFB continues to optimize each treatment plant to reduce the amount of electrical energy consumed, and to implement sustainable treatment plant optimization programs, such as the solar arrays employed to power the ST018GWTP system.

Figure 2 presents the historical GHG production from the ST018GWTP. The ST018GWTP produced 96 pounds of GHG during May 2019 and removed 226,260 gallons of water. The amount of GHG produced is directly attributed to the amount of water removed through the system because the only line-power electrical use is for a transfer pump to push the water from the system to the sanitary sewer.

TABLE 4
Summary of Groundwater Analytical Data for May 2019– Site ST018 Groundwater Treatment Plant

Constituent	Instantaneous Maximum* (µg/L)	Detection Limit (µg/L)	N/C	6 May 2019 (µg/L)
				System Discharge
Fuel Related Constituents				
Methyl tert-Butyl Ether	6,400	0.25	0	**35**
Benzene	25,000[a]	0.16	0	**2.0**
Ethylbenzene	25,000[a]	0.16	0	**2.0**
Toluene	25,000[a]	0.17	0	ND
Total Xylenes	25,000[a]	0.19 – 0.34	0	**0.68 J**
Total Petroleum Hydrocarbons – Gasoline	50,000[b]	10	0	**54**
Total Petroleum Hydrocarbons – Diesel	50,000[b]	15	0	**64**
Total Petroleum Hydrocarbons – Motor Oil	100,000	160	0	ND
Other				
1,2-Dichloroethane	20	0.13	0	ND
Isopropylbenzene	NA	0.19	0	**0.21 J**
Naphthalene	NA	0.22	0	**1.5**
N-Propylbenzene	NA	0.16	0	**0.57 J**
1,2,4-Trimethylbenzene	NA	0.15	0	**1.2**
1,3,5-Trimethylbenzene	NA	0.16	0	**0.45 J**

* In accordance with the Fairfield-Suisun Sewer District Discharge Limitations

Laboratory data available on request.

a – The limit of 25,000 µg/L is a combined limit for BTEX.

b – The limit of 50,000 µg/L is a combined limit for TPH-g and TPH-d

µg/L = micrograms per liter
J = analyte concentration is considered an estimated value due to a detected concentration value between the reporting limit and method detection limit for the contaminant
NA = not applicable
N/C = number of samples out of compliance with discharge limits
ND = not detected above method detection limit

Figure 1

ST018GWTP Total VOC and MTBE Concentrations and Average Flowrate Twelve Month History

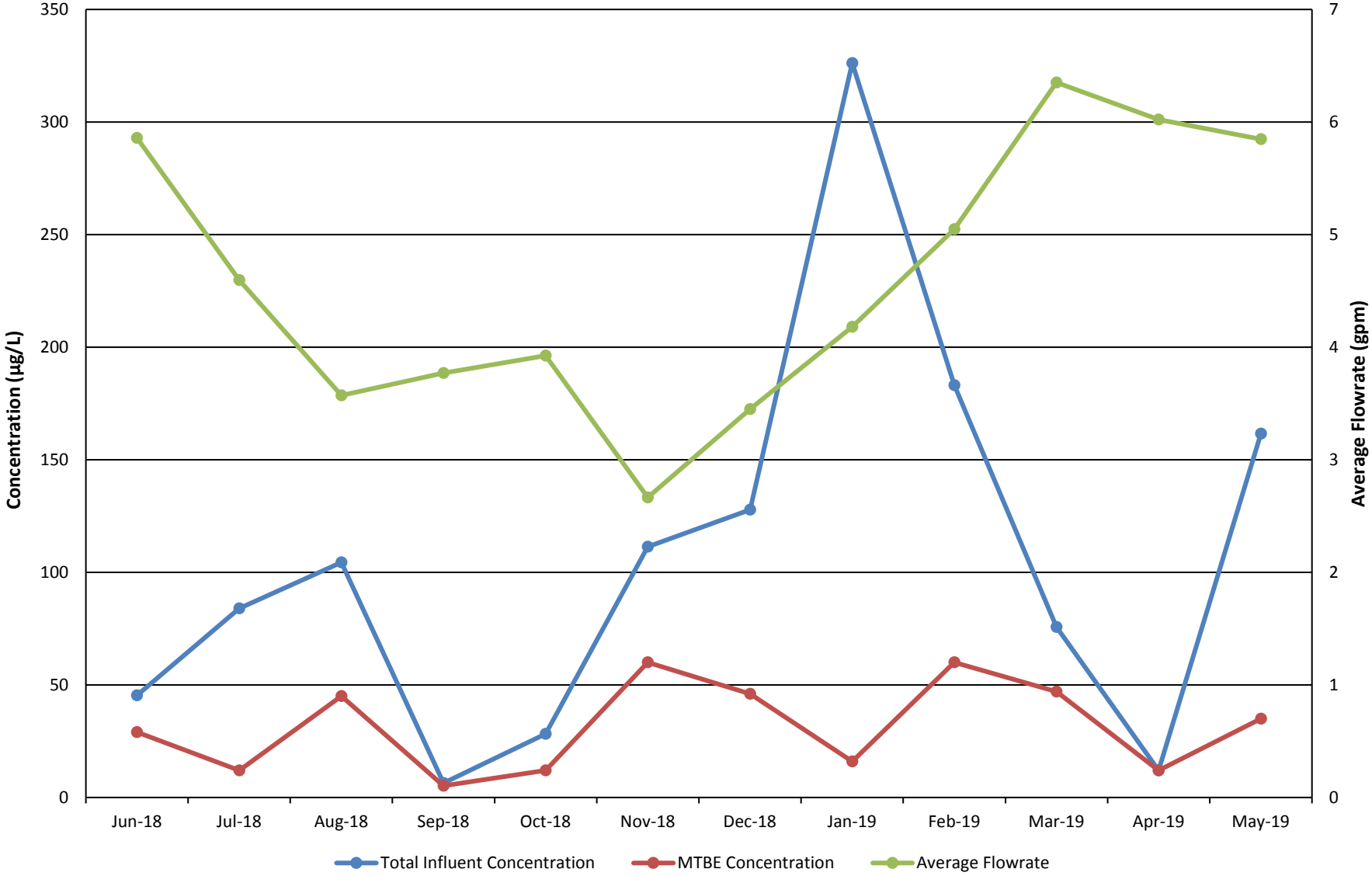
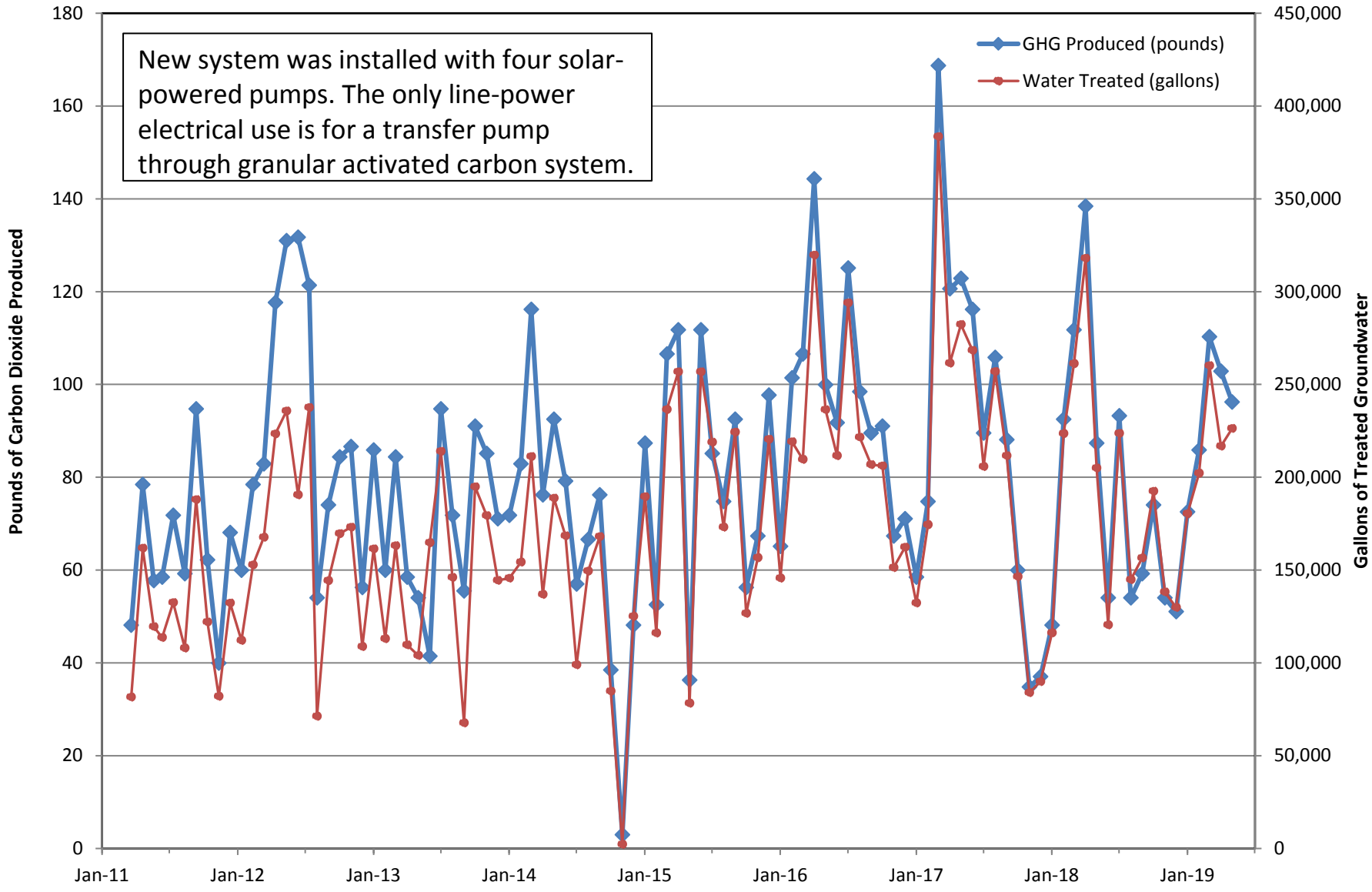


Figure 2

Equivalent Pounds of Carbon Dioxide Produced by the Site ST018 Groundwater Treatment Plant



Travis AFB
Restoration Program

Program Update

RPM Meeting

June 19, 2019

Completed Documents (1)

- Vapor Intrusion Assessment Update Technical Memorandum
- 2012 CAMU Annual Report
- Old Skeet Range Action Memorandum
- 3rd Five-Year Review
- 2012 Annual Groundwater Remediation Implementation Status Report (GRISR)
- Subarea LF007C and Site SS030 Remedial Process Optimization Work Plan
- Pre-Design Site Characterization of SS029 Report
- Old Skeet Range Removal Action Work Plan
- 2013 CAMU Inspection Annual Report
- Groundwater Record of Decision (ROD)
- CG508 POCO Work Plan
- 2013 Annual GRISR
- FT004 Technology Demonstration Work Plan
- Kinder Morgan LF044 Land Use Control Report
- SD031 Technology Demonstration Work Plan
- TA500 Data Gap Investigation Work Plan
- ST018 POCO Work Plan Addendum
- SD037 GW RD/RA Work Plan
- Travis AFB UFP-QAPP
- DP039 Lead Excavation Technical Memo

Completed Documents (2)

- Proposed Plan for ROD Amendment to WABOU Soil ROD
- Proposed Plan for ROD Amendment to NEWIOU Soil, Sediment, & Surface Water ROD
- SD034 Data Gap Investigation Work Plan
- POCO Investigation Work Plan for Oil-Water Separators
- ST032 POCO Soil Excavation Work Plan
- SD036 GW RD/RA Work Plan
- SS016 GW RD/RA Work Plan
- SS015 GW RD/RA Work Plan
- FT005 Technology Demonstration Work Plan
- 2014 Annual CAMU Monitoring Report
- Old Skeet Range PAH Delineation Report
- ST028 POCO Work Plan
- SS014 POCO TD Work Plan
- CG508 Site Investigation/Site Closure Request Report
- 2014 Annual CAMU Monitoring Report
- DP039 GW RD/RA Work Plan
- SD031 TDCCR
- ST018 POCO CCR
- Site SS030 Groundwater RA CCR
- Sites SD036 and SD037 Groundwater RACCR
- Site SS016 Groundwater RACCR
- Site SS015 Groundwater RACCR
- 2014 Annual GRISR
- Site CG508 Well Decommissioning Work Plan

Completed Documents (3)

- Data Gap Investigation TM for Soil Sites SD033, SD043, & SS046
- Site FT004 Technology Demonstration Construction Completion Report
- Site SD031 Soil Remedial Investigation Work Plan
- Corrective Action Plan for DERA-Funded Oil Water Separators
- Site ST032 POCO Completion Report
- Site ST028 POCO Completion Report
- 2015 Annual CAMU Monitoring Report
- Site SD031 Remedial Investigation Work Plan
- Site SD034 Technology Demonstration Work Plan
- Site SS016 Soil Data Gaps Investigation Work Plan
- Multi-Site Bioaugmentation Technology Demonstration Work Plan
- Sites ST028 and ST032 POCO Well Decommissioning Work Plan
- Site TS060 Action Memorandum
- 2015 Annual GRISR
- FT005 Technology Demonstration Construction Completion Report
- Site CG508 POCO Well Decommissioning and Site Closeout Technical Memorandum
- Site DP039 Remedial Action Construction Completion Report
- ST028 POCO Well Decommissioning/Site Closeout Technical Memorandum
- Site TS060 Removal Action Work Plan

Completed Documents (4)

- Multisite Technology Demonstration Construction Completion Report
- SS014 POCO Technology Demonstration Construction Completion Report
- Site LF044 Investigation Work Plan
- Site FT004 POCO Soil Data Gap Investigation Work Plan
- SD034 Technology Demonstration Construction Completion Report
- POCO Evaluation/Closeout Report for DERA-funded oil/water separators OW051, OW053, and OW054
- ST032 POCO Well Decommissioning and Site Closeout Technical Memorandum
- 2016 Annual CAMU Monitoring Report
- Work Plan for Fourth Five-year Review
- 2016 Annual GRISR
- Data Gap Investigation Results, Technical Memorandum for Soil, Sites SD033, SD043, SS046
- TS060 Removal Action Completion Report
- SS035 Site Closure Report
- AOC TA500 Data Gaps Investigation and Closure Report
- Site TS060 No Further Action Proposed Plan
- POCO Evaluation/Closure Report for DERA-funded Oil/Water Separators OW040, OW047, OW048, OW049, OW050, OW052, OW055, OW056, and OW057

Completed Documents (5)

- Data Gap Investigation Results, Technical Memorandum for Soil Site SS016
- LF006, SS030, SD031 Aquifer Test Activities Technical Memorandum
- SS015 Soil Sampling Plan
- Monitoring Well Installation Tech Memo for Site DP039, Addendum to the RACCR
- FT005 Extraction System Optimiz-ation Tech Memo
- 2017 Annual CAMU Monitoring Report
- LF044 Sediment Sampling Report
- SD043 RD/RA Work Plan
- SS046 RD/RA Work Plan
- Amendment to the WABOU Soil ROD for sites DP039, SD043, and SS046
- EVO Sites FT004, SS015, SD031, & SD036 Optimization Injections Tech Memo
- LF006 Technology Demonstration Work Plan
- AOC TA500 Well Decommissioning and Site Closeout Tech Memo
- SS015 Soil Sampling Results Tech Memo
- LF006 Technology Demonstration Construction Completion Report
- ***Subarea LF007C TPH Chromatogram Review TM***
- ***2017 Annual GRISR***

Completed Field Work (1)

- Replace battery banks at ST018 Groundwater Treatment Plant
- Annual Groundwater Remediation Implementation Program (GRIP) Sampling event
- Well Decommissioning (9 Wells)
- Electrical repairs to FT005 extraction system (well EW01x05)
- Electrical repairs to Site SS029 extraction system
- Site ST018 carbon vessels upgrade
- 2014 GRIP Semiannual Sampling Event
- Pump repairs to Site SS016 well (EW610x16)
- Subsite LF007C optimization upgrades
- 2014 Annual GRIP Sampling Event
- Biological Resource Assessment
- Site CG508 Site Investigation
- Old Skeet Range Characterization Sampling
- 4Q Semiannual GRIP Sampling Event
- SD031 Technology Demonstration Well Installation
- SD037 Well Installation
- SD031 Trench/Conveyance/Power Installation
- SD031 EVO Injection
- ST018 Well Installation
- SS015 Well Installation
- SS016 Well Installation
- Well Development (SD036, SD037)
- ST018 Trench/Conveyance/Power Installation
- SD036 EVO Injection
- Well Development (SS015, SS016)
- Baseline Sampling (SS015, SS016)
- SS014 Data Gap Investigation
- SS016 EVO Injection
- TA500 Data Gaps Investigation

Completed Field Work (2)

- 2015 Annual GRIP Sampling
- SD037 EVO Injection
- SD034 Data Gaps Investigation
- SS015 EVO Injection
- FT005 Injection Well Installation
- OWS 47, 48, 49 Site Investigations
- SS030 Trench/Conveyance/Power Installation
- FT005 Trench Installation
- FT005 Well Development
- FT004 Well Installation, Well Development, Baseline Sampling
- FT005 Baseline Sampling
- DP039 Well Installation, Well Development, Baseline Sampling
- FT004 EVO Injection
- FT004 Trench/Conveyance/Power Installation
- DP039 Infiltration Trench Installation
- TA500 Groundwater Sampling
- FT005 EVO Injection
- 2016 Q2 GRIP Sampling
- Data Gap Inv. for Soil Sites (SD043, SS046)
- SD031 Remedial Investigation Step-out Sampling (2nd round)
- DP039 EVO Injection
- CG508 Well Decommissioning
- SD033 Soil Sampling
- Multi-site Bioaugmentation Well Installation
- SD034 Technology Demonstration Well Installation
- SS014 Bioreactor Installation
- ST028 & ST032 Well Decommissioning

Completed Field Work (3)

- SS016 Soil Data Gaps Investigation
- SD031 Remedial Investigation Soil Sampling (3rd round)
- Oil Water Separators Step-out Drilling
- OW055 Close-in-place
- Q4 2016 GRIP Sampling
- OW040 Soil Excavation/Surface Restoration
- OW057 Soil Excavation/Surface Restoration
- Multi-site Bioaugmentation & EVO Injection
- SD034 Technology Demonstration Bioreactor Installation
- OW050 Soil Sampling at Former Location of OWS
- OW055 Sidewalk Repairs
- SD031 Finish Soil Delineation (NE portion of site)
- Q2 2017 GRIP Sampling Event
- SS015 Optimization: Injection Well Installation
- DP039 Down-gradient Monitoring Well Installation (1st round)
- SD036 Optimization: Injection Well Installation
- SD031 Optimization: Injection Well Installation
- OW056 Site Excavation/Closure
- Well Re-development
- TS060 Removal Action

Completed Field Work (4)

- FT004 POCO Soil Data Gaps Investigation
- LF044 Sediment Sampling
- FT004 EVO Optimization
- DP039 Install downgradient monitoring wells (2nd round)
- FT005 – Install Extraction Wells
- DP039 Repair SBGR distribution headers
- Q4 2017 GRIP Sampling
- SD036 EVO Optimization
- SS015 EVO Optimization
- SD031 EVO Optimization
- FT005 Installation of Pumps and Controls in 5 New Extraction Wells
- Q1 2018 GRIP Sampling
- SD037 EVO reinjection
- Q2 2018 GRIP Sampling
- SS015 Soil sampling
- TA500 Well Decommissioning
- FT005 EVO injection
- FT004 POCO Soil Investigation
- 3Q 2018 GRIP Sampling
- LF006 Well Installations and Injections
- 4Q 2018 GRIP Sampling
- SD043 Soil excavation
- 1Q 2019 GRIP Sampling
- 2019 Annual LUC Inspections
- SS046 Soil excavation
- ***2Q 2019 GRIP Sampling Event***

Documents In-Progress

CERCLA

- Amendment to the NEWIOU Soil ROD for Sites SS016 and SD033
- Community Relations Plan Update (revised draft)
- 4th Five Year Review Report for Multiple Groundwater, Soil, and Sediment Sites
- SS016 RD/RA Work Plan
- Addendum to the Site SS016 Groundwater RD/RA Work Plan
- SD043 Remedial Action Completion Report
- SS046 Remedial Action Completion Report
- ***2018 Annual GRISR***

Documents In-Progress

MMRP

- NFA ROD for Old Skeet Range (TS060/TS060A MRA)

POCO

- SS014 POCO Subsites 2, 4, and 5 Closure Evaluation Report

Field Work In-Progress

CERCLA

- ***SD034 O_2 Enhancement***

POCO

- None

Documents Planned

CERCLA

- SD031 Soil RI/FS — Jun
- 2018 LF007 CAMU Inspection, Monitoring, and Maintenance Report — Jul
- ***SD043 Site Closure Report*** — ***Jul***
- ***LF008 Response Complete Report*** — ***Jul***

POCO

- None

Field Work Planned

CERCLA

• SS016 SBGR Repairs	Jun
• Well Re-development (13 wells)	Jun
• SD037 Injection Well Installation	Jul
• SS046 Well Decommissioning	Jul
• ***3rd Quarter GRIP Sampling***	***Aug***
• SS016 Soil excavation (waiting on ROD amendment)	TBD
• SD037 EVO Re-injection (MW 2121x37)	TBD
• ST027B EVO/Bioaugmentation Reinjection	TBD

POCO

- None

Note: Contact Lonnie Duke if you would like to observe planned field work events

Petroleum Technology Demonstration Projects (1)

- SS014: Recycled Drywall Subgrade Biogeochemical Reactor (SBGR)
  - Evaluate the effectiveness of sulfate (gypsum from crushed drywall) to enhance anaerobic biodegradation of petroleum in groundwater
  - Installation was completed November 2016
  - Results through first 22 months
    - TPH-G: 99% reduction in source area (1,900 to <25 mg/L [non-detect])
    - TPH-D: 99% reduction in source area (5,500 to 54 mg/L)
    - Benzene: 99% reduction in source area (90 to <0.4 mg/L [non-detect])
    - Plume as a whole continues to shrink, so this TD has been quite successful

SBGR = Subgrade Biogeochemical Reactor

Updates in Green Font

Petroleum Technology Demonstration Projects (2)

- SD034: Aerobic “Washboard” Subgrade Biogeochemical Reactor (SBGR)
  - Installed six (6) SBGR trenches in November 2016 to evaluate the effectiveness of an oxygen-enhanced aerobic SBGR on reducing TPH as diesel (TPH-D) in groundwater
  - Below SBGR trench (MW811x34/PZSSAx34) through first 2 years
    - TPH-D baseline 9,600 ug/L was reduced to 40 J ug/L after 15 months, with increase to 890 ug/L at 20 months, then decreased to 100 ug/L at 2 years. Concentration fluctuations are to be expected as higher concentration areas are flushed as part of the washboard effect. We are evaluating enhancements to the SBGR trenches to maintain treatment efficiency.)
    - TPH-MO baseline 2,300 ug/L was reduced to 89 J ug/L after 15 months, with increase to 760 ug/L at 20 months, then decreased to non-detect at 2 years
  - Plume hot spot monitoring well (MW02x34) through first 2 years
    - TPH-D baseline 8,300 ug/L was reduced to 6,800 ug/L after 15 months, with increase to 13,000 ug/L at 20 months, then decreased to 6,700 ug/L at 2 years (Concentration fluctuations are to be expected as higher concentration areas are flushed as part of the washboard effect. We are evaluating enhancements to the extraction network to help reductions in this area.)
    - TPH-MO baseline 1,500 ug/L was reduced to 660 J ug/L after 15 months, with non-detect at elevated detection limit at 20 months, then 1,100 ug/L at 2 years (Was 72% reduction after 9 months, seeing some fluctuations)
- Aerobic treatment process for this TD has been successful, but additional enhancements are warranted to maintain treatment efficiency (to be discussed in separate presentation)

Updates in Green Font

CVOC Technology Demonstration Projects (3)

- Multisite Bioaugmentation: EVO and KB-1 Plus (No new information)
  - Evaluate if addition of bioaugmentation substrate to an EVO injection will increase the rate of CVOC degradation
  - Initial injections were completed (Nov 2016)
  - Limited TOC dispersal at SD036, so installed additional injection wells and reinjected with nanoEVO in 2017
  - Too early to evaluate degradation rates; however:
    - ~50-70% TCE reductions at ST027B, but still too early to evaluate if bioaugmentation was beneficial
    - TCE fluctuations at SD036 bioaugmentation area and 99% decrease in the EVO-only area, reinjections and additional injection wells have supported significant reductions to the east of the site (in MW2064Ax36, TCE reduced from 6,400 to 11 ug/L), northeast (in MW2063x36, TCE reduced from 1,000 to 1.8 J ug/L), and to the north (in MW2187x36, TCE reduced from 1,400 to 84 ug/L). Still too early to evaluate if bioaugmentation was beneficial
- FT005: Distribution of EVO and KB-1 Plus
  - Evaluate total organic carbon (TOC) dispersion distances and rates for optimizing the remediation of 1,2-dichloroethane (DCA) in groundwater. TD installation completed May 2016. Optimized the GETs in 2017
    - FT005 north area: Slightly elevated TOC and reduced COC concentrations (below MCLs)**;**
    - FT005 central area: Limited TOC increase observed to date in most areas, as injected EVO may be adsorbed to sediments or being consumed faster than spread can be observed. However, MW2292x05 (south of Base boundary) had TOC increase from 1.2 to 20 mg/L between May and October 2018, likely the result of the newly installed extraction wells and the 2018 reinjection in this area.
    - FT005 south area: No TOC increase observed in this control area: Newly installed extraction wells are effectively capturing the remaining 1,2-DCA hot spots, with concentrations now beginning to decrease in these areas
    - New extraction wells are decreasing 1,2-DCA (e.g., 3.6 to 0.8 J, 1.4, to 0.85 J, 5.9 to 4.4, 3.0 to 1.9 ug/L)
    - We don’t think distribution of TOC through the aquifer via extraction will be viable, although it is still expected to have had a benefit to remediation as a whole

Updates in Green Font

CVOC Technology Demonstration Projects (4)

- FT004: Distribution of EVO via SBGR and/or Groundwater Extraction
  - Determine effectiveness of TOC distribution through two different enhanced reductive dechlorination (ERD) approaches: (1) groundwater TOC recirculation using a combination EVO injection, infiltration SBGR trenches, and groundwater extraction; and (2) EVO injection with groundwater extraction
  - Installation completed April 2016
  - COC concentrations declined through year 1
    - ~50% total molar reduction plume-wide through first year
    - Max monitoring well TCE concentration reduced from 560 to 140 μg/L
  - Limited TOC dispersal, additional EVO injection conducted with nanoEVO in 2017 to determine if this can enhance TOC dispersal (too early to evaluate results of reinjection)
    - Slight TOC increase (3.5 to 5.4 mg/L) and TCE decrease (previous max well rebounded from 140 to 330 ug/L, and then decreased to 63 ug/L following reinjection)
    - Variable TOC increase and TCE decrease in main plume area monitoring wells
    - In some extraction wells, TCE concentrations are increasing. This indicates additional TCE mass below the vernal pools that is now being pulled to the extraction wells (recirculation is working, but we are fighting additional TCE mass below the vernal pools, so it will take additional time to see concentration reductions)

Updates in Green Font

CVOC Technology Demonstration Projects (5)

- SD031: EVO distribution via Gravel Chimneys (No new information)
  - Determine if EVO injection and recirculation of groundwater through gravel chimneys can effectively distribute TOC horizontally in the subsurface to support ERD of 1,1-dichloroethene (DCE)
  - Installation completed in April 2015
  - Early indications:
    - Recirculation through chimneys has been successful relative to our design assumptions, TOC increased to >10 mg/L within majority of target area and COCs decreased to below MCLs (most wells ND, max 1,1-DCE reduced from 390 ug/L to ND)
    - 1,1-DCE (primary COC) concentrations have reduced by 99% (was 93%) (sum of key wells within TD area, excluding 2 wells to SW that increased)
    - Total molar concentration (sum of CVOCs) has reduced by 99% (was 84%) (sum of key wells within TD area, excluding 2 wells to SW that increased)
    - Four (4) new EVO wells installed to SW to enhance TOC in problem areas (plume being pulled back towards extraction well causing increasing concentrations in this cross-gradient area), conducted reinjection of EVO in 2017
    - While the demonstration has treated the originally defined groundwater plume area to below MCLs, we are waiting on 2Q19 data to evaluate effects of reinjections, since there is additional mass being pulled in from cross-gradient that we are continuing to evaluate

Updates in Green Font

Completed Documents (Historical1)

- Basewide Health & Safety Plan (HSP)
- Action Plan
- 2007/2008 GSAP Annual Report
- LF007C RPO Work Plan
- LF008 Rebound Study Work Plan
- SS014 Tier 1 POCO Evaluation Work Plan
- ST027B Site Characterization Work Plan
- SS030 RPO Work Plan
- ST032 POCO Technical Memo
- DP039 Bioreactor Work Plan
- 2008 Annual GWTP RPO Report
- Passive Diffusion Bag (PDB) Technical Memo
- RD/RA QAPP Update
- ST032 Tier 1 POCO Evaluation Work Plan
- Phytostabilization Demonstration Technical Memo
- Model QAPP
- LF008 Rebound Test Technical Memo
- Comprehensive Site Evaluation Phase II Work Plan
- Field Sampling Plan (FSP)
- SS016 RPO Work Plan
- ST018 POCO RA Work Plan
- Vapor Intrusion Assessment Report
- GSAP 2008/2009 Annual Report
- FT005 Data Gap Work Plan
- First, Second, & Third Site DP039 Sustainable Bioreactor Demonstration Progress Reports
- DP039 RPO Work Plan
- SD036/SD037 RPO Work Plan
- ST027B Site Characterization Report
- 2009 GWTP RPO Annual Report Natural Attenuation Assessment Report (NAAR)
- Union Creek Sites SD001 & SD033 Remedial Action Report
- CAMU 2008-2009 Monitoring Annual Report

Completed Documents (Historical 2)

- Phytostabilization Study Report
- 2009/2010 Annual GSAP Report
- SS015 Remedy Optimization Field Implementation Plan
- Sites SS014 and ST032 Tier 1 POCO Evaluation Report
- SD036 Remedy Optimization Field Implementation Plan
- 2010 Annual CAMU Inspection Report
- Site ST018 POCO Baseline Implementation Report
- FT005 Data Gaps Investigation Report
- Comprehensive Site Evaluation Phase II Report
- 2010 Groundwater RPO Annual Report
- Focused Feasibility Study (FFS)
- Site ST027-Area B Human Health Risk Assessment
- Site ST027-Area B Ecological Risk Assessment
- Work Plan for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- 2010/2011 Annual GSAP Report
- Baseline Implementation Report (Sites SS015, SS016, SD036, SD037, and DP039)
- 2011 CAMU Annual Report
- Technical and Economic Feasibility Analysis (TEFA)
- Work Plan for RPO of Sites SS016 and SS029
- Site LF007C Data Gaps Investigation Technical Memorandum
- Technical Memorandum for Assessment of Aerobic Chlorinated Cometabolism Enzymes
- Old Skeet Range Engineering Evaluation/Cost Analysis
- 2011 Groundwater Treatment RPO Annual Report
- Groundwater Proposed Plan (PP)
- FT005 Remedial Action Completion Report
- 2012 GSAP Technical Memorandum

Completed Field Work (Historical1)

- ST027B Gore Sorber Survey–Phase 1
- ST027B Field Sampling – Phase 2
- GSAP 2008 Semi-annual Event
- ST027B Installation of Wells – Phase 3
- SS014 Site Characterization
- LF008 Rebound Study
- GSAP Annual Sampling Event - 2009
- SS030 Site Characterization–Phase 1
- ST027 Site Characterization -Phase 3
- ST014 Monitor Well Install - Subsite 3
- SD001/SD033 Sediment RA
- SS016 Site Characterization (OSA source area)
- ST018 Site Characterization
- SS030 Site Characterization (Off-base VOC Plume)
- DP039 Site Characterization (for Biobarrier Placement)
- SS014 & ST032 Q1 2010 MNA Sampling (2nd of 4 quarterly events)
- SD036 Additional Site Characterization (north & east)
- Therm/Ox System Removal
- SS016 Monitoring Well Installation
- SD037 EVO Injection Well Installation
- DP039 Monitoring Well & Injection Well Installation
- DP039 EVO Injection
- SD037 Monitoring Well Installation
- GSAP 2010 Annual Sampling Event
- SD037 EVO Injection
- SS015 Site Characterization
- South Plant GAC Change-out
- FT005 Data Gap Investigation
- SS016 Position Survey of EW03
- SS016 Bioreactor Installation
- SS016 Bioreactor Baseline Sampling
- DP039 Biobarrier Quarterly Performance Sampling

Completed Field Work (Historical 2)

- DP039 Bioreactor Quarterly Performance Sampling
- SD037 EVO Quarterly Performance Sampling
- SS015 EVO Baseline Sampling
- SD036 EVO Baseline Sampling
- SS016 Bioreactor Startup
- SD036 Injection Wells Installation
- SS015 Injection Wells Installation
- ST018 GETS Installation
- SD036 EVO Injection
- 2010 Semiannual GSAP
- SS015 EVO Injection
- Quarterly RPO Performance Monitoring (Feb 2011)
- ST018 GETS Startup
- Quarterly RPO Performance Monitoring (May 2011)
- 2011 Annual GSAP Sampling
- SS029 GET Shutdown Test (System Optimization analysis)
- Quarterly RPO Performance Monitoring (Aug 2011)
- Quarterly RPO Performance Monitoring (Nov 2011)
- 2011 Semiannual GSAP Sampling
- LF007C Site Characterization (Wetlands)
- FT005 Soil Remedial Action
- Performance Monitoring SS015 (4th Quarterly event)
- Sampling for Assessment of Aerobic Chlorinated Cometabolism Enzymes (Feb 21-22)
- 2012 Annual GSAP Sampling
- CAMU Lysimeter Removal
- LF007C GET System Optimization
- SS029/SS016 System Optimization Analysis
- GSAP Semiannual Sampling Event
- Replace electrical wiring for well field at Site SS030